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EXAMINER

MOTSINGER, SEAN T

ART UNIT	PAPER NUMBER
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2624

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	03/26/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 03/26/2007.

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lhptoms@leehayes.com

Office Action Summary	Application No. 10/676,519	Applicant(s) MA ET AL.	
	Examiner Sean Motsinger	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 9/30/2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>See Continuation Sheet</u> . | 6) <input type="checkbox"/> Other: _____ |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :7/16/2004,12/30/2004,4/12/2006,07/10/20061/22/2007.

Objections to the Specification

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: Claims 8 and 18 state "...color in texture areas across the quantized image perception units are coarser as compared to the image...". There is no mention in the specification of normalization of the image perception units in texture areas.

Rejections Under 35 U.S.C. 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

1. Claims 7-17 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The language "A computer-readable medium comprising computer-program instructions for modeling image attention, the computer-program instructions being executable by a processor for modeling image attention by" does direct the claim to statutory subject matter. The medium comprises computer program instructions and computer programs per say. The medium cannot be a program it must store a program. Examiner suggests the language "A computer-readable medium storing computer-program instructions for modeling image attention, the computer-program instructions being executable by a processor for modeling image attention; the instructions comprising:"

Rejections under 35 U.S.C. 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 8-21 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.
3. Re claims 8-21, Claims 8 and 18 state "...color in texture areas across the quantized image perception units are coarser as compared to the image..". However there is no mention in the specification of normalization of the image perception units in texture areas. Since no description of why or how this is done one of ordinary skill in the art would not know to normalize the texture area's in a useful manor. Claims 9-17 and 19-21 are rejected for depending from claims 8 and 18.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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4. Claim 8-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
5. Re claims 8-21, Claims 8 and 18 state "...color in texture areas across the quantized image perception units are coarser as compared to the image..". However there is no mention in the specification of normalization of the image perception units in texture areas. Since no description of why or how this is done one of ordinary skill in the art would not know what exactly applicant means by normalizing the texture area. Therefore these claims are indefinite. For the purposes of examination examiner will interpret the claim to say "...color in texture areas across the quantized image perception units are coarser as compared to the image..". Claims 9-17 and 19-21 are rejected for depending from claims 8 and 18.
6. Re claim 14, Claim 14 states the language "fuzzy growing". It is not known what makes growing "fuzzy". Applicant needs to include a explicit definition of the term "fuzzy growing" in the claim to make this clear. For the purposes of examination examiner interprets "fuzzy growing" as "growing."

Rejections under 35 U.S.C. 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osberger US 6670963 in view of "*Peer group filtering and perceptual color image quantization*" Yining Deng; Kenney, C.; Moore, M.S.; Manjunath, B.S.; Circuits and Systems, 1999. ISCAS '99. Proceedings of the 1999 IEEE International Symposium on Volume 4, 30 May-2 June 1999 Page(s):21 - 24 vol.4.
8. Re claim 1 Osberger discloses a method for modeling image attention, the method comprising: generating a contrast-based (note the map depends on contrast see column 5 lines 60-61) saliency map (importance map column 2 lines 39-40) for modeling one-to-three levels of image attention from the quantized image blocks (note this section is intended use and the saliency map only need be capable of being used to accomplish it).

Osberger does not disclose preprocessing an image to generate a quantized set of image blocks.

However Deng discloses preprocessing an image to generate a quantized set of image blocks (see section 5 first paragraph). The motivation to combine is that Deng

states "The results of color quantization can be used in color image segmentation."

Therefor it would have been obvious to one of ordinary skill in the art to combine Osberger with Deng to reach the aforementioned advantage.

9. Re claim 3 Osberger discloses wherein generating the contrast-based saliency map further comprises: dividing the image subsequent to quantization into multiple perception units (regions column 3 lines 9-11); and calculating a respective contrast of color components for each perception unit (lines 60- 67); and normalizing calculated contrasts (column 6 lines 3-6) to smooth the contrasts.
10. Re claim 4 Osberger discloses extracting attended points from the contrast-based saliency map (column 2 lines 16-21 figure 2(b) note a region of interest is found, since this is a digital picture, the region will be a collection of pixels i.e. points).
11. Re claim 5 Osberger discloses extracting attended area from the contrast-based saliency map (region column 2 lines 16-21 figure 2(b)).
12. Re claim 6 Osberger discloses extracting attended view from the contrast-based saliency map (region column 2 lines 16-21 figure 2(b) Note a region is a view.)

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13. Claims 2, 7 8-10, 13 18-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osberger, in view of Deng, in further view of Stentiford US 6,934,415.

14. Re claim 2 Deng further discloses wherein preprocessing further comprises: transforming the image from a first color space to a second color space that is consistent with human perception (page 3 section 4 paragraph 4 also note all color spaces are consistent with human perception); and making color in texture areas (detailed regions) of the image coarser (see section 3 paragraph 2).

Deng does not disclose resizing the image such that an aspect ratio of the image is maintained;

Stentiford discloses resizing the image such that an aspect ratio of the image is maintained (column 10 lines 45-50 figure 12 note processing is only preformed on a subset of pixels, note from figure 12 the aspect ratio is the same). Note the motivation to combine is to "increase speed of operation" see column 10 lines 46-47.

15. Re claim 7, note this claim comprises computer readable medium storing instructions comprising the method of claim 1 (see rejection for claim 1 to show the method) Osberger does not discloses performing his method on a computer or the corresponding computer program. Stentiford discloses using such a computer readable medium on (column 3 lines 12 –15). The motivation to combine is that such methods are well know to be preformed much faster by a computer. Therefor it

would have been obvious to one of ordinary skill in the art to combine Osberger with Deng and Stentiford to reach the aforementioned advantage.

16. Re Claim 8 Osberger discloses, generating a contrast-based saliency map (importance map column 2 lines 38-40) from the quantized image blocks, the contrast-based saliency map comprising a respective contrast of color components (color contrast column 5 line 60) for each perception unit (region column 5 line 61).

Osberger does not disclose resizing the image such that an aspect ratio of the image is maintained; and if the image is not already in a color space that is consistent with human perception, transforming the image from a first color space to a second color space that is consistent with human perception; quantizing the preprocessed image to generate quantized image perception units such that color in texture areas across the quantized image perception units are coarser as compared to the image; Osberger also does not disclose implementing his method via a computer program stored on a computer readable medium.

Deng discloses generating a preprocessed image by: if the image is not already in a color space that is consistent with human perception, transforming the image from a first color space to a second color space that is consistent with human perception (page 3 section 4 paragraph 4 also note all color spaces are consistent with human perception); quantizing the preprocessed image to generate quantized image perception units (see section 5 first paragraph) such that color in texture areas across the quantized image perception units are coarser(see section 3

paragraph 2) as compared to the image. The motivation to combine is that Deng states "The results of color quantization can be used in color image segmentation." Therefor it would have been obvious to one of ordinary skill in the art to combine Osberger with Deng to reach the aforementioned advantage.

Stentiford discloses resizing the image such that an aspect ratio of the image is maintained (column 10 lines 45-50 figure 12 note processing is only preformed on a subset of pixels, note from figure 12 the aspect ratio is the same). Stentiford discloses using a computer readable medium to store code for a similar method (column 3 lines 12 –15). Note the motivation to combine is to "increase speed of operation" see column 10 lines 46-47 and such methods are well know to be preformed much faster by a computer. Therefor it would have been obvious to one of ordinary skill in the art to combine Osberger with Deng and Stentiford to reach the aforementioned advantage.

17. Re Claim 9 Osberger discloses wherein the computer-program instructions further comprise instructions for extracting attended points from the contrast-based saliency map (column 2 lines 16-21 figure 2(b) note a region of interest is found, since this is a digital picture, the region will be a collection of pixels i.e. points).
18. Re Claim 10 Osberger discloses wherein the computer-program instructions further comprise instructions for extracting attended view from the contrast-based saliency map (region column 2 lines 16-21 figure 2(b) Note a region is a view).

19. Re Claim 13 Osberger discloses wherein the computer-program instructions further comprise instructions for extracting attended area from the contrast-based saliency map (region column 2 lines 16-21 figure 2(b)).
20. Re claim 18 Osberger generating a contrast-based saliency map (importance map column 2 lines 38-40) from the quantized image blocks, the contrast-based saliency map comprising a respective contrast of color components (color contrast column 5 line 60) for each perception unit (region column 5 line 61).

Osberger does not disclose quantizing a preprocessed image to generate quantized image perception units such that color in texture areas across the quantized image perception units are coarser as compared to the image, the preprocessed image being a resized version of the image with an original aspect ratio and in a color space consistent with human perception.

Deng discloses quantizing the preprocessed image to generate quantized image perception units (see section 5 first paragraph) such that color in texture areas across the quantized image perception units are coarser (see section 3 paragraph 2) as compared to the image; the processed image being in a color space consistent with human perception (page 3 section 4 paragraph 4 also note all color spaces are consistent with human perception). The motivation to combine is that Deng states "The results of color quantization can be used in color image segmentation."

Stentiford discloses resizing the image such that an aspect ratio of the image is maintained (column 10 lines 45-50 figure 12 note processing is only preformed on a subset of pixels, note from figure 12 the aspect ratio is the same). Stentiford discloses using a computer readable medium to store code for a similar method (column 3 lines 12 –15). Note the motivation to combine is to “increase speed of operation” see column 10 lines 46-47 and such methods are well know to be preformed much faster by a computer. Therefor it would have been obvious to one of ordinary skill in the art to combine Osberger with Deng and Stentiford to reach the aforementioned advantage.

21. Re claim 19 Osberger discloses wherein the computer-program instructions further comprise instructions for extracting attended points from the contrast-based saliency map (column 2 lines 16-21 figure 2(b) note a region of interest is found, since this is a digital picture, the region will be a collection of pixels i.e. points).
22. Re claim 20 Osberger discloses wherein the computer-program instructions further comprise instructions for extracting attended area from the contrast-based saliency map (region column 2 lines 16-21 figure 2(b)).
23. Re claim 21 Osberger discloses wherein the computer-program instructions further comprise instructions for extracting attended view from the contrast-based saliency map (region column 2 lines 16-21 figure 2(b) Note a region is a view).

24. Re claims 22-26 these claims correspond to the means for performing the method of claims 1 and 3-6 respectively. This means has been interpreted to be a computer system configured with the appropriate software to perform the method. Osberger and Deng disclose the method (see rejections for claims 1 and 3-6) however they do not disclose implementing their method on such a system. Stentiford discloses using a computer and software to implement a similar system (column 3 lines 9-10). The motivation to combine is that such methods are well known to be performed much faster by a computer. Therefore it would have been obvious to one of ordinary skill in the art to combine Osberger with Deng and Stentiford to reach the aforementioned advantage.
25. Claims 8-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Warnick US 5,901,245 in view of Deng in further view of Stentiford.
26. Re claim 8 Warnick discloses, a computer-readable medium comprising computer-program instructions for modeling image attention (see column 3 lines 1-6), the computer-program instructions being executable by a processor for modeling image attention by: generating a contrast-based (note the map depends on contrast see column 4 line 19) saliency map (activity map column 4 line 20), the contrast-based saliency map comprising a respective contrast of color components (column 4

lines 30-35 note this uses color differencing to find contrast) for each perception unit (pixel).

Warnick does not disclose generating a preprocessed image by: resizing the image such that an aspect ratio of the image is maintained; and if the image is not already in a color space that is consistent with human perception, transforming the image from a first color space to a second color space that is consistent with human perception; quantizing the preprocessed image to generate quantized image perception units such that color in texture areas across the quantized image perception units are coarser as compared to the image.

Deng discloses generating a preprocessed image by: if the image is not already in a color space that is consistent with human perception, transforming the image from a first color space to a second color space that is consistent with human perception (page 3 section 4 paragraph 4 also note all color spaces are consistent with human perception); quantizing the preprocessed image to generate quantized image perception units (see section 5 first paragraph) such that color in texture areas across the quantized image perception units are coarser(see section 3 paragraph 2) as compared to the image. The motivation to combine is that Deng states "The results of color quantization can be used in color image segmentation." Therefor it would have been obvious to one of ordinary skill in the art to combine Warnick with Deng to reach the aforementioned advantage.

Stentiford discloses resizing the image such that an aspect ratio of the image is maintained (column 10 lines 45-50 figure 12 note processing is only preformed on a

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subset of pixels, note from figure 12 the aspect ratio is the same). Note the motivation to combine is to "increase speed of operation" see column 10 lines 46-47 and such methods are well know to be preformed much faster by a computer. Therefor it would have been obvious to one of ordinary skill in the art to combine Warnick with Deng and Stentiford to reach the aforementioned advantage.

27. Re claim 9 Warnick discloses wherein the computer-program instructions further comprise instructions for extracting attended points (pixels see column 7 lines5-10 note the reference is detecting opens spaces which are attended points) from the contrast-based saliency map (activity map).

28. Re claim 10 Warnick discloses wherein the computer-program instructions further comprise instructions for extracting an attended view (detected open space shape column 8 lines 12-17) from the contrast-based saliency map (attention map).

29. Re claim 11 Warnick discloses wherein the computer-program instructions further comprise instructions for extracting an attended view from the contrast-based saliency map (see rejection for claim 10), the attended view being a rectangle (column 8 line 17) $V(C, W, H)$, where C denotes an attention center, and W and H are the width and height of rectangle respectively (column 8 major and minor axis lines 13-15), the attention center being a centroid of the contrast-based saliency

map (Note that the rectangle must contains some local centroid of open space of called an attention center).

30. Re claim 12 Warnick discloses wherein the computer-program instructions further comprise instructions for determining a size of an attended view (column 8 line 15 finding the smallest rectangle implies finding the size) in the contrast-based saliency map, the size being related to a 1st order central moment of the contrast-based saliency map. (Note the size of the view is related to the size of the open space, the size of the open space will have a relationship to a 1st order central moment of the contrast-based saliency map.)
31. Re Claim 13 Warnick discloses wherein the computer-program instructions further comprise instructions for extracting attended area (open space column 7 lines 44-46 figure 3(d)) from the contrast-based saliency map.
32. Re Claim 14 Warnick discloses wherein the computer-program instructions further comprise instructions for extracting attended areas from the contrast-based saliency map by performing a growing operation (region growing operation line 25) on the contrast-based saliency map as a function of two classes of pixels (column 7 line 7 note the pixels are define as 0 or 1 so there are two classes) to partition the contrast-based saliency map into two mutually exclusive areas(produce an open space map column 7 lines 26-28 figure 3d note it is partitioned into two areas "open

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space" and not open space), the two classes of pixels comprising attended (1 column 7 line 7) and unattended pixel areas (0 column 7 line 7).

Allowable subject matter

33. Claims 15-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and all rejections under 35 U.S.C. 101 and 35 U.S.C. 112 1st and 2nd paragraph were overcome. Claim 16 contains allowable subject matter because none of the prior art of record discloses modeling the saliency map as a fuzzy event in probability space. Claim 17 contains allowable subject matter because it depends from claim 16. Claim 15 is allowable because while iterative region growing based on seeds is well known the art of record (see "Seeded region growing" Adams, R.; Bischof, L.; Pattern Analysis and Machine Intelligence, IEEE Transactions on Volume 16, Issue 6, June 1994 Page(s):641 – 647, it is not combinable in this case because Warnick would not seeded at a point of maximum contrast.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean Motsinger whose telephone number is 571-270-1237. The examiner can normally be reached on 9-5 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on (571)272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Motsinger
3/15/2007



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